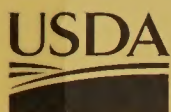


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May 1999

# Official United States Standards for Grain



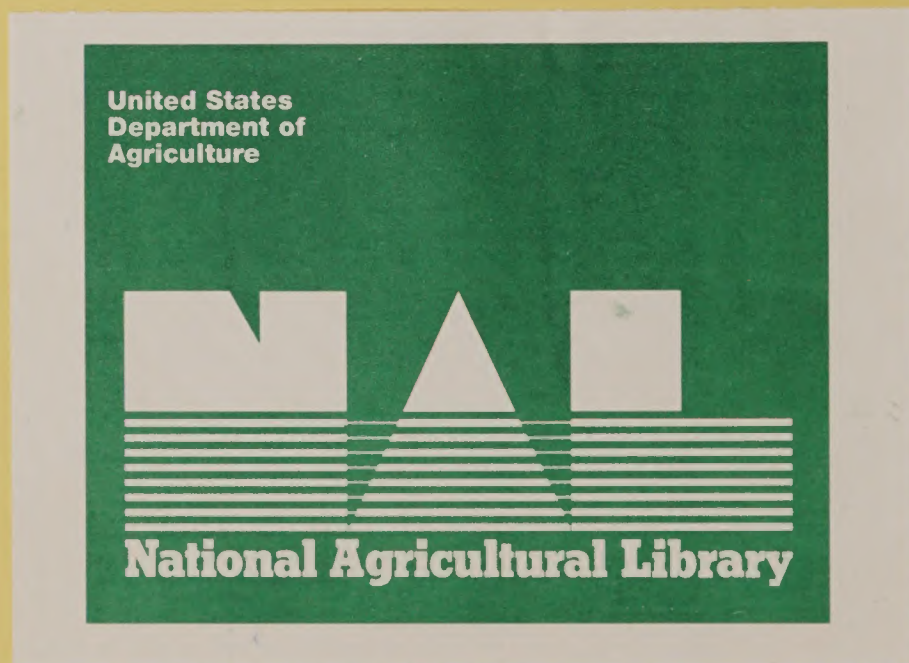
# OFFICIAL UNITED STATES STANDARDS FOR GRAIN

U. S. Department of Agriculture  
Grain Inspection, Packers and Stockyards Administration  
Federal Grain Inspection Service  
STOP 3649  
Washington, DC 20250-3649

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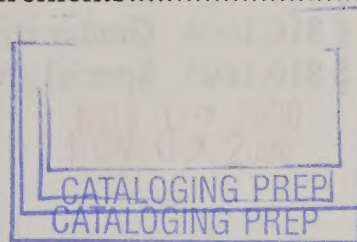
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# Official United States Standards for Grain

## Subpart A -- General Provisions

Note: *Compliance with the provisions of these standards does not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act or other Federal laws.*

### Terms Defined

#### § 810.101 Grains for which standards are established.

Grain refers to barley, canola, corn, flaxseed, mixed grain, oats, rye, sorghum, soybeans, sunflower seed, triticale, and wheat. Standards for these food grains, feed grains, and oilseeds are established under the United States Grain Standards Act.

#### § 810.102 Definition of other terms.

Unless otherwise stated, the definitions in this section apply to all grains. All other definitions unique to a particular grain are contained in the appropriate subpart for that grain.

(a) *Distinctly low quality.* Grain that is obviously of inferior quality because it is in an unusual state or condition, and that cannot be graded properly by use of other grading factors provided in the standards. Distinctly low quality includes the presence of any objects too large to enter the sampling device; i.e., large stones, wreckage, or similar objects.

(b) *Moisture.* Water content in grain as determined by an approved device according to procedures prescribed in FGIS instructions.

(c) *Stones.* Concreted earthy or mineral matter and other substances of similar hardness that do not disintegrate in water.

(d) *Test weight per bushel.* The weight per Winchester bushel (2,150.42 cubic inches) as determined using an approved device according to procedures prescribed in FGIS instructions. Test weight per bushel in the standards for corn, mixed grain, oats, sorghum, and soybeans is determined on the original sample. Test weight per bushel in the standards for barley, flaxseed, rye, sunflower seed, triticale, and wheat is determined after mechanically cleaning the original sample. Test weight per bushel is recorded to the nearest tenth pound for corn, rye, triticale, and wheat. Test weight per bushel for all other



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grains, if applicable, is recorded in whole and half pounds with a fraction of a half pound disregarded. Test weight per bushel is not an official factor for canola.

(e) *Whole kernels.* Grain with one-fourth or less of the kernel removed.

## Principles Governing the Application of Standards

### § 810.103 Basis of determination.

(a) *Distinctly low quality.* The determination of distinctly low quality is made on the basis of the lot as a whole at the time of sampling when a condition exists that may or may not appear in the representative sample and/or the sample as a whole.

(b) *Certain quality determinations.* Each determination of rodent pellets, bird droppings, other animal filth, broken glass, castor beans, cockleburs, crotalaria seeds, dockage, garlic, live insect infestation, large stones, moisture, temperature, an unknown foreign substance(s), and a commonly recognized harmful or toxic substance(s) is made on the basis of the sample as a whole. When a condition exists that may not appear in the representative sample, the determination may be made on the basis of the lot as a whole at the time of sampling according to procedures prescribed in FGIS instructions.

(c) *All other determinations.* The basis of determination for all other factors is contained in the individual standards.

### § 810.104 Percentages.

(a) *Rounding.* Percentages are determined on the basis of weight and are rounded as follows:

(1) When the figure to be rounded is followed by a figure greater than or equal to 5, round to the next higher figure; e.g., report 6.36 as 6.4, 0.35 as 0.4, and 2.45 as 2.5.

(2) When the figure to be rounded is followed by a figure less than 5, retain the figure; e.g., report 8.34 as 8.3, and 1.22 as 1.2.

(b) *Recording.* The percentage of dockage in flaxseed and sorghum is reported in whole percent with fractions of a percent being disregarded. Dockage in barley and triticale is reported in whole and half percent with a fraction less than one-half percent being disregarded. Dockage in wheat and rye is reported in whole and tenth percents to the



nearest tenth percent. Foreign material in sunflower seed is reported to the nearest one-half percent. Ranges of sunflower seed foreign material are reported as follows: 0.0 to 0.24 is reported as 0.0 percent, 0.25 to 0.74 as 0.5 percent, 0.75 to 1.24 as 1.0 percent, and the like. Foreign material and fines in mixed grain is reported in whole percent. The percentage of smut in barley, sclerotinia and stones in canola, and ergot in all grains is reported to the nearest hundredth percent. The percentage when determining the identity of all grains is reported to the nearest whole percent. Also reported to the nearest whole percent are the classes and subclasses in wheat; flint corn; flint and dent corn; waxy corn; classes in barley; and the percentage of each kind of grain in mixed grain. Plump barley shall be expressed in terms of the range in which it falls. Ranges shall be: Below 50 percent, 50 to 55 percent, 56 to 60 percent, 61 to 65 percent, and the like. All other percentages are reported in tenths percent.

### Grades, Grade Requirements, and Grade Designations

#### § 810.105 Grades and grade requirements.

The grades and grade requirements for each grain (except mixed grain) are shown in the grade table(s) of the respective standards. Mixed grain grade requirements are not presented in tabular form.

#### § 810.106 Grade designations.

(a) *Grade designations for grain.* The grade designations include in the following order:

- (1) The letters "U.S.";
- (2) The abbreviation "No." and the number of the grade or the words "Sample grade";
- (3) When applicable, the subclass;
- (4) The class or kind of grain;
- (5) When applicable, the special grade(s) except in the case of bright, extra heavy, and heavy oats or plump rye, the special grades "bright", "extra heavy", "heavy", and "plump" will precede the word "oats" or "rye" as applicable; and
- (6) When applicable, the word "dockage" together with the percentage thereof.

When applicable, the remarks section of the certificate will include in the order of predominance; in the case of a mixed class, the name and approximate percentage of

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the classes; in the case of sunflower seed, the percentage of admixture; in the case of mixed grain, the grains present in excess of 10.0 percent of the mixture and when applicable, the words *Other grains* followed by a statement of the percentage of the combined quantity of those kinds of grains, each of which is present in a quantity less than 10.0 percent; in the case of barley, if requested, the word "plump" with the percentage range thereof; and in the case of wheat, if requested, the percentage of protein content.

(b) *Optional grade designations.* In addition to paragraph (a) of this Section, grain may be certificated under certain conditions as described in FGIS instructions when supported by official analysis as "U.S. No. 2 or better (*type of grain*)", "U.S. No. 3 or better (*type of grain*)", and the like.

### Special Grades, Special Grade Requirements, and Special Grade Designations

#### § 810.107 Special grades and special grade requirements.

A special grade serves to draw attention to a special factor or condition present in the grain and, when applicable, is supplemental to the grade assigned under § 810.106. Except for the special grade "infested," the special grades are identified and requirements are established in each respective grain standards.

(a) *Infested wheat, rye, and triticale.* Tolerances for live insects responsible for infested wheat, rye, and triticale are defined according to sampling designations as follows:

(1) *Representative sample.* The representative sample consists of the work portion and the file sample if needed and when available. These grains will be considered infested if the representative sample (other than shiplots) contains two or more live weevils, or one live weevil and one or more other live insects injurious to stored grain, or two or more live insects injurious to stored grain.

(2) *Lot as a whole (stationary).* The lot as a whole is considered infested when two or more live weevils, or one live weevil and one or more other live insects injurious to stored grain, or two or more other live insects injurious to stored grain are found in, on, or about the lot (excluding submitted samples and shiplots).

(3) *Sample as a whole (continuous loading/unloading of shiplots and bargelots).* The minimum sample size for bargelots and shiplots is 500 grams per each 2,000 bushels



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of grain. The sample as a whole is considered infested when a component (as defined in FGIS instructions) contains two or more live weevils, or one live weevil and one or more other live insects injurious to stored grain, or two or more other live insects injurious to stored grain.

(b) *Infested barley, canola, corn, oats, sorghum, soybeans, sunflower seed, and mixed grain.* Tolerances for live insects responsible for infested barley, canola, corn, oats, sorghum, soybeans, sunflower seed, and mixed grain are defined according to sampling designations as follows:

(1) *Representative sample.* The representative sample consists of the work portion, and the file sample if needed and when available. These grains will be considered infested if the representative sample (other than shiplots) contains two or more live weevils, or one live weevil and five or more other live insects injurious to stored grain, or ten or more other live insects injurious to stored grain.

(2) *Lot as a whole (stationary).* The lot as a whole is considered infested when two or more live weevils, or one live weevil and five or more other live insects injurious to stored grain, or ten or more other live insects injurious to stored grain are found in, on, or about the lot (excluding submitted samples and shiplots).

(3) *Sample as a whole (continuous loading/unloading of shiplots and bargelots).* The minimum sample for shiplots and bargelots is 500 grams per each 2,000 bushels of grain. The sample as a whole is considered infested when a component (as defined in FGIS instructions) contains two or more live weevils, or one live weevil and five or more other live insects injurious to stored grain, or ten or more other live insects injurious to stored grain.

### **§ 810.108 Special grade designations.**

Special grade designations are shown as prescribed in § 810.106. Multiple special grade designations will be listed in alphabetical order. In the case of treated wheat, the official certificate shall show whether the wheat has been scoured, limed, washed, sulfured, or otherwise treated.





## Subpart B -- United States Standards for Barley

### Terms Defined

#### § 810.201 Definition of barley.

Grain that, before the removal of dockage, consists of 50 percent or more of whole kernels of cultivated barley (*Hordeum vulgare* L.) and not more than 25 percent of other grains for which standards have been established under the United States Grain Standards Act. The term "barley" as used in these standards does not include hull-less barley or black barley.

#### § 810.202 Definition of other terms.

(a) *Black barley*. Barley with black hulls.

(b) *Broken kernels*. Barley with more than 1/4 of the kernel removed.

(c) *Classes*. There are two classes of barley: Malting barley and Barley.

(1) *Malting barley*. Barley of a six-rowed or two-rowed malting type. The class Malting barley is divided into the following three subclasses:

(i) *Six-rowed Malting barley*. Barley that has a minimum of 95.0 percent of a six-rowed suitable malting type that has 90.0 percent or more of kernels with white aleurone layers that contains not more than 1.9 percent injured-by-frost kernels, 0.4 percent frost-damaged kernels, 0.2 percent injured-by-heat kernels, and 0.1 percent heat-damaged kernels. Six-rowed Malting barley shall not be infested, blighted, ergoty, garlicky, or smutty as defined in § 810.107(b) and § 810.206.

(ii) *Six-rowed Blue Malting barley*. Barley that has a minimum of 95.0 percent of a six-rowed suitable malting type that has 90.0 percent or more of kernels with blue aleurone layers that contains not more than 1.9 percent injured-by-frost kernels, 0.4 percent frost-damaged kernels, 0.2 percent injured-by-heat kernels, and 0.1 percent heat-damaged kernels. Six-rowed Blue Malting barley shall not be infested, blighted, ergoty, garlicky, or smutty as defined in §810.107(b) and §810.206.

(iii) *Two-rowed Malting barley*. Barley that has a minimum of 95.0 percent of a two-rowed suitable malting type that contains not more than 1.9 percent injured-by-frost kernels, 0.4 percent frost-damaged kernels, 0.2 percent injured-by-heat kernels, 0.1 percent heat-damaged kernels, 1.9 percent injured-by-mold kernels, and 0.4 percent

## Barley

mold-damaged kernels. Two-rowed Malting barley shall not be infested, blighted, ergoty, garlicky, or smutty as defined in § 810.107(b) and § 810.206.

(2) *Barley*. Any barley of a six-rowed or two-rowed type. The class Barley is divided into the following three subclasses:

(i) *Six-rowed barley*. Any six-rowed barley that contains not more than 10.0 percent of two-rowed varieties.

(ii) *Two-rowed barley*. Any two-rowed barley with white hulls that contains not more than 10.0 percent of six-rowed varieties.

(iii) *Barley*. Any barley that does not meet the requirements for the subclasses Six-rowed barley or Two-rowed barley.

(d) *Damaged kernels*. Kernels, pieces of barley kernels, other grains, and wild oats that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, injured-by-heat, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(e) *Dockage*. All matter other than barley that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of barley kernels removed in properly separating the material other than barley and that cannot be recovered by properly rescreening or recleaning.

(f) *Foreign material*. All matter other than barley, other grains, and wild oats that remains in the sample after removal of dockage.

(g) *Frost-damaged kernels*. Kernels, pieces of barley kernels, other grains, and wild oats that are badly shrunk and distinctly discolored black or brown by frost.

(h) *Germ-damaged kernels*. Kernels, pieces of barley kernels, other grains, and wild oats that have dead or discolored germ ends.

(i) *Heat-damaged kernels*. Kernels, pieces of barley kernels, other grains, and wild oats that are materially discolored and damaged by heat.



(j) *Injured-by-frost kernels.* Kernels and pieces of barley kernels that are distinctly indented, immature, or shrunken in appearance or that are light green in color as a result of frost before maturity.

(k) *Injured-by-heat kernels.* Kernels, pieces of barley kernels, other grains, and wild oats that are slightly discolored as a result of heat.

(l) *Injured-by-mold kernels.* Kernels and pieces of barley kernels containing slight evidence of mold.

(m) *Mold-damaged kernels.* Kernels, pieces of barley kernels, other grains, and wild oats that are weathered and contain considerable evidence of mold.

(n) *Other grains.* Black barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, and wheat.

(o) *Plump barley.* Barley that remains on top of a 6/64 x 3/4 slotted-hole sieve after sieving according to procedures prescribed in FGIS instructions.

(p) *Sieves.*

(1) *5/64 x 3/4 slotted-hole sieve.* A metal sieve 0.032 inch thick with slotted perforations 0.0781 (5/64) inch by 0.750 (3/4) inch.

(2) *5.5/64 x 3/4 slotted-hole sieve.* A metal sieve 0.032 inch thick with slotted perforations 0.0895 (5.5/64) inch by 0.750 (3/4) inch.

(3) *6/64 x 3/4 slotted-hole sieve.* A metal sieve 0.032 inch thick with slotted perforations 0.0937 (6/64) inch by 0.750 (3/4) inch.

(q) *Skinned and broken kernels.* Barley kernels that have one-third or more of the hull removed, or that the hull is loose or missing over the germ, or broken kernels, or whole kernels that have a part or all of the germ missing.

(r) *Sound barley.* Kernels and pieces of barley kernels that are not damaged as defined under (d) of this section.

(s) *Suitable malting type.* Varieties of malting barley that are recommended by the American Malting Barley Association and other malting type(s) used by the malting and brewing industry. The varieties are listed in GIPSA's instructions.

## Barley

(t) *Thin barley*. Thin barley shall be defined for the appropriate class as follows:

(1) *Malting barley*. Six-rowed Malting barley that passes through a  $5/64 \times 3/4$  slotted-hole sieve and Two-rowed Malting barley which passes through a  $5.5/64 \times 3/4$  slotted-hole sieve in accordance with procedures prescribed in GIPSA's instructions.

(2) *Barley*. Six-rowed barley, Two-rowed barley, or Barley that passes through a  $5/64 \times 3/4$  slotted-hole sieve in accordance with procedures prescribed in GIPSA's instructions.

(u) *Wild oats*. Seeds of *Avena fatua* L. and *A. sterilis* L.

## Principles Governing the Application of Standards

### § 810.203 Basis of determination.

*All other determinations*. Each determination of heat-damaged kernels, injured-by-heat kernels, and white or blue aleurone layers in Six-rowed barley is made on pearled, dockage-free barley. Other determinations not specifically provided for under the *General Provisions* are made on the basis of the grain when free from dockage, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

Grades and Grade Requirements

§ 810.204 Grades and grade requirements for Six-rowed Malting barley and Six-rowed Blue Malting barley.

Grade	Minimum limits of--			Maximum limits of--				
	Test weight per bushel (pounds)	Suitable malting types (percent)	Sound barley <sup>1/</sup> (percent)	Damaged kernels <sup>1/</sup> (percent)	Foreign material (percent)	Other Grains (percent)	Skinned and broken kernels (percent)	Thin barley (percent)
U.S. No. 1	47.0	95.0	97.0	2.0	0.5	2.0	4.0	7.0
U.S. No. 2	45.0	95.0	94.0	3.0	1.0	3.0	6.0	10.0
U.S. No. 3	43.0	95.0	90.0	4.0	2.0	5.0	8.0	15.0
U.S. No. 4	43.0	95.0	87.0	5.0	3.0	5.0	10.0	15.0

<sup>1/</sup> Injured-by-frost kernels and injured-by-mold kernels are not considered damaged kernels or considered against sound barley.

NOTES: Malting barley shall not be infested in accordance with § 810.107(b) and shall not contain any special grades as defined in § 810.206. Six-rowed Malting barley and Six-rowed Blue Malting barley varieties not meeting the requirements of this section shall be graded in accordance with standards established for the class Barley.

§ 810.205 Grades and grade requirements for Two-rowed Malting barley.

Grade	Minimum limits of -			Maximum limits of--			
	Test weight per bushel (pounds)	Suitable malting types (percent)	Sound barley <sup>1/</sup> (percent)	Wild oats (percent)	Foreign material (percent)	Skinned and broken kernels (percent)	Thin barley (percent)
U.S. No. 1	50.0	97.0	98.0	1.0	0.5	5.0	5.0
U.S. No. 2	48.0	97.0	98.0	1.0	1.0	7.0	7.0
U.S. No. 3	48.0	95.0	96.0	2.0	2.0	10.0	10.0
U.S. No. 4	48.0	95.0	93.0	3.0	3.0	10.0	10.0

<sup>1/</sup> Injured-by-frost kernels and injured-by-mold kernels are not considered damaged kernels or considered against sound barley.

NOTES: Malting barley shall not be infested in accordance with § 810.107(b) and shall not contain any special grades as defined in § 810.206. Two-rowed Malting barley varieties not meeting the requirements of this section shall be graded in accordance with standards established for the class Barley.



## Barley

### § 810.206 Grades and grade requirements for barley.

Grade	Minimum limits of		Maximum limits of				
	Test weight per bushel (pounds)	Sound barley (percent)	Damaged kernels <sup>1/2</sup> (percent)	Heat-damaged kernels (percent)	Foreign material (percent)	Broken kernels (percent)	Thin barley (percent)
U.S. No. 1	47.0	97.0	2.0	0.2	1.0	4.0	10.0
U.S. No. 2	45.0	94.0	4.0	0.3	2.0	8.0	15.0
U.S. No. 3	43.0	90.0	6.0	0.5	3.0	12.0	25.0
U.S. No. 4	40.0	85.0	8.0	1.0	4.0	18.0	35.0
U.S. No. 5	36.0	75.0	10.0	3.0	5.0	28.0	75.0

U.S. Sample Grade:

U.S. Sample grade shall be barley that:

- (a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or
- (b) Contains 8 or more stones or any number of stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria* spp.), 2 or more castor beans (*Ricinus communis* L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cocklebur (*Xanthium* spp.) or similar seeds singly or in combination, 10 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1-1/8 to 1-1/4 quarts of barley; or
- (c) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or
- (d) Is heating or otherwise of distinctly low quality.

<sup>1/2</sup> Includes heat-damaged kernels. Injured-by-frost kernels and injured-by-mold kernels are not considered damaged kernels.

## Special Grades and Special Grade Requirements

### § 810.207 Special grades and special grade requirements.

(a) *Blighted barley*. Barley that contains more than 4.0 percent of fungus-damaged and/or mold-damaged kernels.

(b) *Ergoty barley*. Barley that contains more than 0.10 percent ergot.

(c) *Garlicky barley*. Barley that contains three or more green garlic bulblets, or an equivalent quantity of dry or partly dry bulblets in 500 grams of barley.

(d) *Smutty barley*. Barley that has kernels covered with smut spores to give a smutty appearance in mass, or which contains more than 0.20 percent smut balls.





## Subpart C -- United States Standards for Canola

### Terms Defined

#### § 810.301 Definition of canola.

Seeds of the genus *Brassica* from which the oil shall contain less than 2 percent erucic acid in its fatty acid profile and the solid component shall contain less than 30.0 micromoles of any one or any mixture of 3-butenyl glucosinolate, 4-pentenyl glucosinolate, 2-hydroxy-3-butenyl, or 2-hydroxy-4-pentenyl glucosinolate, per gram of air-dried, oil free solid. Before the removal of dockage, the seed shall contain not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

#### § 810.302 Definition of other terms.

(a) *Conspicuous admixture*. All matter other than canola including, but not limited to, ergot, sclerotinia, and stones, which is conspicuous and readily distinguishable from canola and which remains in the sample after the removal of machine separated dockage. Conspicuous admixture is added to machine separated dockage in the computation of total dockage.

(b) *Damaged kernels*. Canola and pieces of canola that are heat-damaged, sprout-damaged, mold-damaged, distinctly green damaged, frost damaged, rimed damaged, or otherwise materially damaged.

(c) *Distinctly green kernels*. Canola and pieces of canola which, after being crushed, exhibit a distinctly green color.

(d) *Dockage*. All matter other than canola that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of canola kernels that cannot be recovered by properly rescreening or recleaning. Machine separated dockage is added to conspicuous admixture in the computation of total dockage.

(e) *Ergot*. Sclerotia (sclerotium, sing.) of the fungus, *Claviceps* species, which are associated with some seeds other than canola where the fungal organism has replaced the seed.

(f) *Heat-damaged kernels*. Canola and pieces of canola which, after being crushed, exhibit that they are discolored and damaged by heat.

## Canola

(g) *Inconspicuous admixture*. Any seed which is difficult to distinguish from canola. This includes, but is not limited to, common wild mustard (*Brassica kaber* and *B. juncea*), domestic brown mustard (*Brassica juncea*), yellow mustard (*B. hirta*), and seed other than the mustard group.

(h) *Sclerotia (sclerotium, sing.)*. Dark colored or black resting bodies of the fungi *Sclerotinia* and *Claviceps*.

(i) *Sclerotinia*. Genus name which includes the fungus *Sclerotinia sclerotiorum* which produces sclerotia. Canola is only infrequently infected, and the sclerotia, unlike sclerotia of ergot, are usually associated within the stem of the plants.

### Principles Governing the Application of Standards

#### § 810.303 Basis of determination.

Each determination of conspicuous admixture, ergot, sclerotinia, stones, damaged kernels, heat-damaged kernels, distinctly green kernels, and inconspicuous admixture is made on the basis of the sample when free from dockage. Other determinations not specifically provided for under the general provisions are made on the basis of the sample as a whole, except the determination of odor is made on either the basis of the sample as a whole or the sample when free from dockage. The content of glucosinolates and erucic acid is determined on the basis of the sample according to procedures prescribed in FGIS instructions.

Grades and Grade Requirements

§ 810.304 Grades and grade requirements for canola.

Grading factors	Grades, U.S. Nos.		
	1	2	3
Damaged kernels:			
Heat damaged	0.1	0.5	2.0
Distinctly green	2.0	6.0	20.0
Total	3.0	10.0	20.0
Conspicuous admixture:			
Ergot	0.05	0.05	0.05
Sclerotinia	0.05	0.10	0.15
Stones	0.05	0.05	0.05
Total	1.0	1.5	2.0
Inconspicuous admixture	5.0	5.0	5.0
Maximum count limits of:			
Other material:			
Animal filth	3	3	3
Glass	0	0	0
Unknown foreign substance	1	1	1
U.S. Sample grade Canola that:			
(a) Does not meet the requirements for U.S. Nos. 1, 2, or 3; or			
(b) Has a musty, sour, or commercially objectionable foreign odor; or			
(c) Is heating or otherwise of distinctly low quality.			

Special Grades and Special Grade Requirements

§ 810.305 Special grades and special grade requirements.

*Garlicky canola.* Canola that contains more than two green garlic bulblets or an equivalent quantity of dry or partly dry bulblets in approximately a 500 gram portion.

Nongrade Requirements

§ 810.306 Nongrade requirements.

*Glucosinolates.* Content of glucosinolates in canola is determined according to procedures prescribed in FGIS instructions.





## Subpart D -- United States Standards for Corn

### Terms Defined

#### § 810.401 Definition of corn.

Grain that consists of 50 percent or more of whole kernels of shelled dent corn and/or shelled flint corn (*Zea mays L.*) and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

#### § 810.402 Definition of other terms.

(a) *Broken corn.* All matter that passes readily through a 12/64 round-hole sieve and over a 6/64 round-hole sieve according to procedures prescribed in FGIS instructions.

(b) *Broken corn and foreign material.* All matter that passes readily through a 12/64 round-hole sieve and all matter other than corn that remains in the sieved sample after sieving according to procedures prescribed in FGIS instructions.

(c) *Classes.* There are three classes for corn: Yellow corn, White corn, and Mixed corn.

(1) *Yellow corn.* Corn that is yellow-kerneled and contains not more than 5.0 percent of corn of other colors. Yellow kernels of corn with a slight tinge of red are considered Yellow corn.

(2) *White corn.* Corn that is white-kerneled and contains not more than 2.0 percent of corn of other colors. White kernels of corn with a slight tinge of light straw or pink color are considered White corn.

(3) *Mixed corn.* Corn that does not meet the color requirements for either of the classes Yellow corn or White corn and includes white-capped Yellow corn.

(d) *Damaged kernels.* Kernels and pieces of corn kernels that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(e) *Foreign material.* All matter that passes readily through a 6/64 round-hole sieve and all matter other than corn that remains on top of the 12/64 round-hole sieve according to procedures prescribed in FGIS instructions.

(f) *Heat-damaged kernels.* Kernels and pieces of corn kernels that are materially discolored and damaged by heat.



## Corn

### (g) *Sieves.*

(1) *12/64 round-hole sieve.* A metal sieve 0.032 inch thick with round perforations 0.1875 (12/64) inch in diameter which are 1/4 inch from center to center. The perforations of each row shall be staggered in relation to the adjacent row.

(2) *6/64 round-hole sieve.* A metal sieve 0.032 inch thick with round perforations 0.0937 (6/64) inch in diameter which are 5/32 inch from center to center. The perforations of each row shall be staggered in relation to the adjacent row.

## Principles Governing the Application of Standards

### § 810.403 Basis of determination.

Each determination of class, damaged kernels, heat-damaged kernels, waxy corn, flint corn, and flint and dent corn is made on the basis of the grain after the removal of the broken corn and foreign material. Other determinations not specifically provided for under the general provisions are made on the basis of the grain as a whole, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from broken corn and foreign material.

Grades and Grade Requirements

§ 810.404 Grades and grade requirements for corn.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of:		
		Damaged kernels		Broken corn and foreign material (percent)
		Heat damaged kernels (percent)	Total (percent)	
U.S. No. 1	56.0	0.1	3.0	2.0
U.S. No. 2	54.0	0.2	5.0	3.0
U.S. No. 3	52.0	0.5	7.0	4.0
U.S. No. 4	49.0	1.0	10.0	5.0
U.S. No. 5	46.0	3.0	15.0	7.0
U.S. Sample Grade				
U.S. Sample grade is corn that:				
(a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or				
(b) Contains stones with an aggregate weight in excess of 0.1 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds ( <i>Crotalaria</i> spp.), 2 or more castor beans ( <i>Ricinus communis</i> L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburrs ( <i>Xanthium</i> spp.), or similar seeds singly or in combination, or animal filth in excess of 0.20 percent in 1,000 grams; or				
(c) Has a musty, sour, or commercially objectionable foreign odor; or				
(d) Is heating or otherwise of distinctly low quality.				

Special Grades and Special Grade Requirements

§ 810.405 Special grades and special grade requirements.

- (a) *Flint corn*. Corn that consists of 95 percent or more of flint corn.
- (b) *Flint and dent corn*. Corn that consists of a mixture of flint and dent corn containing more than 5.0 percent but less than 95 percent of flint corn.
- (c) *Waxy corn*. Corn that consists of 95 percent or more waxy corn, according to procedures prescribed in FGIS instructions.





## Subpart E -- United States Standards for Flaxseed

### Terms Defined

#### § 810.601 Definition of flaxseed.

Grain that, before the removal of dockage, consists of 50 percent or more of common flaxseed (*Linum usitatissimum* L.) and not more than 20 percent of other grains for which standards have been established under the United States Grain Standards Act and which, after the removal of dockage, contains 50 percent or more of whole flaxseed.

#### § 810.602 Definition of other terms.

(a) *Damaged kernels*. Kernels and pieces of flaxseed kernels that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(b) *Dockage*. All matter other than flaxseed that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of flaxseed kernels removed in properly separating the material other than flaxseed and that cannot be recovered by properly rescreening or recleaning.

(c) *Heat-damaged kernels*. Kernels and pieces of flaxseed kernels that are materially discolored and damaged by heat.

(d) *Other grains*. Barley, corn, cultivated buckwheat, einkorn, emmer, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, wheat, and wild oats.

### Principles Governing the Application of Standards

#### § 810.603 Basis of determination.

Other determinations not specifically provided for under the general provisions are made on the basis of the grain when free from dockage, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

Flaxseed

Grades and Grade Requirements

§ 810.604 Grades and grade requirements for flaxseed.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of damaged kernels	
		Heat damaged kernels (percent)	Total (percent)
U.S. No. 1	49.0	0.2	10.0
U.S. No. 2	47.0	0.5	15.0
U.S. Sample grade-- U.S. Sample grade is flaxseed that: (a) Does not meet the requirements for the grades U.S. Nos. 1 or 2; or (b) Contains 8 or more stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds ( <i>Crotalaria</i> spp.), 2 or more castor beans ( <i>Ricinus communis</i> L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 10 or more rodent pellets, bird dropping, or equivalent quantity of other animal filth per 1-1/8 to 1-1/4 quarts of flaxseed; or (c) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor), or (d) Is heating or otherwise of distinctly low quality.			

## Subpart F -- United States Standards for Mixed Grain

### Terms Defined

#### § 810.801 Definition of mixed grain.

Any mixture of grains for which standards have been established under the United States Grain Standards Act, provided that such mixture does not come within the requirements of any of the standards for such grains; and that such mixture consists of 50 percent or more of whole kernels of grain and/or whole or broken soybeans which will not pass through a 5/64 triangular-hole sieve and/or whole flaxseed that passes through such a sieve after sieving according to procedures prescribed in FGIS instructions.

#### § 810.802 Definition of other terms.

(a) *Damaged kernels*. Kernels and pieces of grain kernels for which standards have been established under the Act that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(b) *Foreign material and fines*. All matter other than whole flaxseed that passes through a 5/64 triangular-hole sieve, and all matter other than grains for which standards have been established under the Act, that remains in the sieved sample.

(c) *Grades*. U.S. Mixed Grain, or U.S. Sample grade Mixed Grain, and special grades.

(d) *Heat-damaged kernels*. Kernels and pieces of grain kernels for which standards have been established under the Act, that are materially discolored and damaged by heat.

(e) *Sieve. 5/64 triangular-hole sieve*. A metal sieve 0.032 inch thick with equilateral triangular perforations the inscribed circles of which are 0.0781 (5/64) inch in diameter.

### Principles Governing the Application of Standards

#### § 810.803 Basis of determination.

Each determination of damaged and heat-damaged kernels and the percentage of each kind of grain in the mixture is made on the basis of the sample after removal of foreign material and fines. Other determinations not specifically provided for under the general provisions are made on the basis of the grain as a whole, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from foreign material and fines.



## Mixed Grain

### Grades and Grade Requirements

#### § 810.804 Grades and grade requirements for mixed grain.

(a) *U.S. Mixed Grain (grade)*. Mixed grain with not more than 15.0 percent of damaged kernels, and not more than 3.0 percent of heat-damaged kernels, and that otherwise does not meet the requirements for the grade U.S. Sample grade Mixed Grain.

(b) *U.S. Sample grade Mixed Grain*. Mixed grain that:

(1) Does not meet the requirements for the grade U.S. Mixed Grain; or

(2) Contains more than 16.0 percent moisture; or

(3) Contains 8 or more stones that have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more *Crotalaria* (*Crotalaria* spp.), 2 or more castor beans (*Ricinus communis* L.), 8 or more cockleburrs (*Xanthium* spp.) or similar seeds singly or in combination, 4 or more pieces of an unknown foreign substance(s) or a recognized harmful or toxic substance(s), 10 or more rodent pellets, bird droppings, or an equivalent quantity of other animal filth per 1,000 grams of mixed grain; or

(4) Is musty, sour, or heating; or

(5) Has any commercially objectionable foreign odor except smut or garlic; or

(6) Is otherwise of distinctly low quality.

### Special Grades and Special Grade Requirements

#### § 810.805 Special grades and special grade requirements.

(a) *Blighted mixed grain*. Mixed grain in which barley predominates and that contains more than 4.0 percent of fungus-damaged and/or mold-damaged barley kernels.

(b) *Ergoty mixed grain*.

(1) Mixed grain in which rye or wheat predominates and that contains more than 0.30 percent ergot, or

(2) Any other mixed grain that contains more than 0.10 percent ergot.

(c) *Garlicky mixed grain.*

(1) Mixed grain in which wheat, rye, or triticale predominates, and that contains 2 or more green garlic bulblets, or an equivalent quantity of dry or partly dry bulblets in 1,000 grams of mixed grain; or

(2) Any other mixed grain that contains 4 or more green garlic bulblets, or an equivalent quantity of dry or partly dry bulblets, in 500 grams of mixed grain.

(d) *Smutty mixed grain.*

(1) Mixed grain in which rye, triticale, or wheat predominates, and that contains 15 or more average size smut balls, or an equivalent quantity of smut spores in 250 grams of mixed grain, or

(2) Any other mixed grain that has the kernels covered with smut spores to give a smutty appearance in mass or that contains more than 0.2 percent smut balls.

(e) *Treated mixed grain.* Mixed grain that has been scoured, limed, washed, sulfured, or treated in such a manner that its true quality is not reflected by the grade designation U.S. Mixed Grain or U.S. Sample grade Mixed Grain.





## Subpart G -- United States Standards for Oats

### Terms Defined

#### § 810.1001 Definition of oats.

Grain that consists of 50 percent or more of oats (*Avena sativa* L. and *A. byzantina* C. Koch) and may contain, singly or in combination, not more than 25 percent of wild oats and other grains for which standards have been established under the United States Grain Standards Act.

#### § 810.1002 Definition of other terms.

(a) *Fine seeds*. All matter that passes through a 5/64 triangular-hole sieve after sieving according to procedures prescribed in FGIS instructions.

(b) *Foreign material*. All matter other than oats, wild oats, and other grains.

(c) *Heat-damaged kernels*. Kernels and pieces of oat kernels, other grains, and wild oats that are materially discolored and damaged by heat.

(d) *Other grains*. Barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, and wheat.

(e) *Sieves*.

(1) *5/64 triangular-hole sieve*. A metal sieve 0.032 inch thick with equilateral triangular perforations the inscribed circles of which are 0.0781 (5/64) inch in diameter.

(2) *0.064 x 3/8 oblong-hole sieve*. A metal sieve 0.032 inch thick with oblong perforations 0.064 inch by 0.375 (3/8) inch.

(f) *Sound oats*. Kernels and pieces of oat kernels (except wild oats) that are not badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(g) *Wild oats*. Seeds of *Avena fatua* L. and *A. sterilis* L.

Oats

Principles Governing the Application of Standards

§ 810.1003 Basis of determination.

Other determinations not specifically provided for under the general provisions are made on the basis of the grain as a whole.

Grades and Grade Requirements

§ 810.1004 Grades and grade requirements for oats.

Grade	Minimum limits-		Maximum limits-		
	Test weight per bushel (pounds)	Sound oats (percent)	Heat-damaged kernels (percent)	Foreign material (percent)	Wild oats (percent)
U.S. No. 1	36.0	97.0	0.1	2.0	2.0
U.S. No. 2	33.0	94.0	0.3	3.0	3.0
U.S. No. 3 <sup>1/</sup>	30.0	90.0	1.0	4.0	5.0
U.S. No. 4 <sup>2/</sup>	27.0	80.0	3.0	5.0	10.0
<p>U.S. Sample grade--</p> <p>U.S. Sample grade are oats which:</p> <p>(a) Do not meet the requirements for the grades U.S. Nos. 1, 2, 3, or 4; or</p> <p>(b) Contain 8 or more stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (<i>Crotalaria</i> spp.), 2 or more castor beans (<i>Ricinus communis</i> L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cocklebur (<i>Xanthium</i> spp.) or similar seeds singly or in combination, 10 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1-1/8 to 1-1/4 quarts of oats; or</p> <p>(c) Have a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or</p> <p>(d) Are heating or otherwise of distinctly low quality.</p>					
<p><sup>1/</sup> Oats that are slightly weathered shall be graded not higher than U.S. No. 3.</p> <p><sup>2/</sup> Oats that are badly stained or materially weathered shall be graded not higher than U.S. No. 4.</p>					

## Special Grades and Special Grade Requirements

### § 810.1005 Special grades and special grade requirements.

- (a) *Bleached oats*. Oats that in whole or in part, have been treated with sulfurous acid or any other bleaching agent.
- (b) *Bright oats*. Oats, except bleached oats, that are of good natural color.
- (c) *Ergoty oats*. Oats that contain more than 0.10 percent ergot.
- (d) *Extra-heavy oats*. Oats that have a test weight per bushel of 40 pounds or more.
- (e) *Garlicky oats*. Oats that contain 4 or more green garlic bulblets or an equivalent quantity of dry or partly dry bulblets in 500 grams of oats.
- (f) *Heavy oats*. Oats that have a test weight per bushel of 38 pounds or more but less than 40 pounds.
- (g) *Smutty oats*. Oats that have kernels covered with smut spores to give a smutty appearance in mass, or that contain more than 0.2 percent of smut balls.
- (h) *Thin oats*. Oats that contain more than 20.0 percent of oats and other matter, except fine seeds, that pass through a 0.064 x 3/8 oblong-hole sieve but remain on top of a 5/64 triangular-hole sieve after sieving according to procedures prescribed in FGIS instructions.





## Subpart H -- United States Standards for Rye

### Terms Defined

#### § 810.1201 Definition of rye.

Grain that, before the removal of dockage, consists of 50 percent or more of common rye (*Secale cereale* L.) and not more than 10 percent of other grains for which standards have been established under the United States Grain Standards Act and that, after the removal of dockage, contains 50 percent or more of whole rye.

#### § 810.1202 Definition of other terms.

(a) *Damaged kernels*. Kernels, pieces of rye kernels, and other grains that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(b) *Dockage*. All matter other than rye that can be removed from the original sample by use of an approved device in accordance with procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of rye kernels removed in properly separating the material other than rye and that cannot be recovered by properly rescreening and recleaning.

(c) *Foreign material*. All matter other than rye that remains in the sample after the removal of dockage.

(d) *Heat-damaged kernels*. Kernels, pieces of rye kernels, and other grains that are materially discolored and damaged by heat.

(e) *Other grains*. Barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, wheat, and wild oats.

(f) *Sieve. 0.064 x 3/8 oblong-hole sieve*. A metal sieve 0.032 inch thick with oblong perforations 0.064 by 0.375 (3/8) inch.

(g) *Thin rye*. Rye and other matter that passes through a 0.064 x 3/8 oblong-hole sieve after sieving according to procedures prescribed in FGIS instructions.

Rye

Principles Governing the Application of Standards

§ 810.1203 Basis of determination.

Other determinations not specifically provided for under the general provisions are made on the basis of the grain when free from dockage, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

Grades and Grade Requirements

§ 810.1204 Grades and grade requirements for rye.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of:				
		Foreign material		Damaged kernels		Thin rye (percent)
		Foreign matter other than wheat (percent)	Total (percent)	Heat damaged (percent)	Total (percent)	
U.S. No. 1	56.0	1.0	3.0	0.2	2.0	10.0
U.S. No. 2	54.0	2.0	6.0	0.2	4.0	15.0
U.S. No. 3	52.0	4.0	10.0	0.5	7.0	25.0
U.S. No. 4	49.0	6.0	10.0	3.0	15.0	--
U.S. Sample grade --						
U.S. Sample grade is rye that:						
(a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, or 4; or						
(b) Contains 8 or more stones or any numbers of stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds ( <i>Crotalaria</i> spp.), 2 or more castor beans ( <i>Ricinus communis</i> L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 2 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1-1/8 to 1-1/4 quarts of rye; or						
(c) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or						
(d) Is heating or otherwise of distinctly low quality.						



## Special Grades and Special Grade Requirements

### § 810.1205 Special grades and special grade requirements.

- (a) *Ergoty rye*. Rye that contains more than 0.30 percent of ergot.
- (b) *Garlicky rye*. Rye that contains in a 1,000-gram portion more than six green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.
- (c) *Light garlicky rye*. Rye that contains in a 1,000-gram portion two or more, but not more than six, green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.
- (d) *Light smutty rye*. Rye that has an unmistakable odor of smut, or that contains in a 250-gram portion smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 14 smut balls but not in excess of a quantity equal to 30 smut balls of average size.
- (e) *Plump rye*. Rye that contains not more than 5.0 percent of rye and other matter that passes through a 0.064 x 3/8 oblong-hole sieve.
- (f) *Smutty rye*. Rye that contains in a 250-gram portion smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.



## Subpart I -- United States Standards for Sorghum

### Terms Defined

#### § 810.1401 Definition of sorghum.

Grain that, before the removal of dockage, consists of 50 percent or more of whole kernels of sorghum (*Sorghum bicolor* (L.) Moench) excluding nongrain sorghum and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

#### § 810.1402 Definitions of other terms.

(a) *Broken kernels*. All matter which passes through a 5/64 triangular-hole sieve and over a 2.5/64 round-hole sieve according to procedures prescribed in FGIS instructions.

(b) *Broken kernels and foreign material*. The combination of broken kernels and foreign material as defined in paragraphs (a) and (f) of this section.

(c) *Classes*. There are four classes of sorghum: Sorghum, Tannin sorghum, White sorghum, and Mixed sorghum.

(1) *Sorghum*. Sorghum which is low in tannin content due to the absence of a pigmented testa (subcoat) and contains less than 98.0 percent White sorghum and not more than 3.0 percent Tannin sorghum. The pericarp color of this class may appear white, yellow, pink, orange, red, or bronze.

(2) *Tannin sorghum*. Sorghum which is high in tannin content due to the presence of a pigmented testa (subcoat) and contains not more than 10.0 percent non-Tannin sorghum. The pericarp color of this class is usually brown but may also be white, yellow, pink, orange, red, or bronze.

(3) *White sorghum*. Sorghum which is low in tannin content due to the absence of a pigmented testa (subcoat) and contains not more than 2.0 percent sorghum of other classes. The pericarp color of this class is white or translucent and includes sorghum containing spots that, singly or in combination, cover 25.0 percent or less of the kernel.

(4) *Mixed sorghum*. Sorghum which does not meet the requirements for any of the classes Sorghum, Tannin sorghum, or White sorghum.

(d) *Damaged kernels*. Kernels, pieces of sorghum kernels, and other grains that are badly ground damaged, badly weather damaged, diseased, frost-damaged, germ-damaged, heat-

## Sorghum

damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(e) *Dockage*. All matter other than sorghum that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of sorghum kernels removed in properly separating the material other than sorghum.

(f) *Foreign material*. All matter, except sorghum, which passes over the number 6 riddle and all matter other than sorghum that remains on the top of the 5/64 triangular-hole sieve according to procedures prescribed in FGIS instructions.

(g) *Heat-damaged kernels*. Kernels, pieces of sorghum kernels, and other grains that are materially discolored and damaged by heat.

(h) *Nongrain sorghum*. Seeds of broomcorn, Johnson-grass, *Sorghum alnum* Parodi, sorghum-sudangrass hybrids, sorgrass, sudangrass, and sweet sorghum (*sorgo*).

(i) *Pericarp*. The pericarp is the outer layers of the sorghum grain and is fused to the seedcoat.

(j) *Sieves*.

(1) *1.98 mm (5/64 (0.0781) inches) triangular-hole sieve*. A metal sieve 0.81 mm (0.032 inches) thick with equilateral triangular perforations the inscribed circles of which are 1.98 mm (0.0781 inches) in diameter.

(2) *0.99 mm (2 1/2/64 (0.0391) inches) round-hole sieve*. A metal sieve 0.81 mm (0.032 inch) thick with round holes 0.99 mm (0.0391 inches) in diameter.

## Principles Governing the Application of Standards

### § 810.1403 Basis of determination.

Each determination of broken kernels and foreign material is made on the basis of the grain when free from dockage. Each determination of class, damaged kernels, heat-damaged kernels, and stones is made on the basis of the grain when free from dockage and that portion of the broken kernels, and foreign material that will pass through a 1.98 mm (5/64 inch) triangular-hole sieve. Other determinations not specifically provided for in the general provisions are made on the basis of the grain as a whole except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage, broken kernels, and foreign material removed by the 1.98 mm (5/64 inch) triangular-hole sieve.



Sorghum Grades and Grade Requirements

§ 810.1404 - Grades and grade requirements for sorghum.

Grading factors	Grades U.S. Nos. <sup>1/</sup>			
	1	2	3	4
Minimum pound limits of				
Test weight per bushel:	57.0	55.0	53.0	51.0
Maximum percent limits of				
Damaged kernels:				
Heat (part of total)	0.2	0.5	1.0	3.0
Total	2.0	5.0	10.0	15.0
Broken kernels and foreign material:				
Foreign material (part of total)	1.5	2.5	3.5	4.5
Total	4.0	7.0	10.0	13.0
Maximum count limits of				
Other material:				
Animal filth	9	9	9	9
Castor beans	1	1	1	1
Crotalaria seeds	2	2	2	2
Glass	1	1	1	1
Stones <sup>2/</sup>	7	7	7	7
Unknown foreign substance	3	3	3	3
Cockleburs	7	7	7	7
U.S. Sample grade is sorghum that:				
(a) Does not meet the requirements for U.S. Nos. 1, 2, 3, or 4; or				
(b) Has a musty, sour or commercially objectionable foreign odor (except smut odor); or				
(c) Is badly weathered, heating or distinctly low quality.				
<div><div></div><div><sup>1/</sup> Sorghum which is distinctly discolored shall not grade higher than U.S. No. 3.</div></div> <div><div></div><div><sup>2/</sup> Aggregate weight of stones must also exceed 0.2 percent of the sample weight.</div></div>				

## Sorghum

### Special Grades and Special Grade Requirements

#### § 810.1405 Special grades and special grade requirements.

*Smutty sorghum.* Sorghum that has kernels covered with smut spores to give a smutty appearance in mass, or that contains 20 or more smut balls in 100 grams of sorghum.

## Subpart J -- United States Standards for Soybeans

### Terms Defined

#### § 810.1601 Definition of soybeans.

Grain that consists of 50 percent or more of whole or broken soybeans (*Glycine max* (L.) Merr.) that will not pass through an 8/64 round-hole sieve and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

#### § 810.1602 Definition of other terms.

(a) *Classes*. There are two classes of soybeans: Yellow soybeans and Mixed soybeans.

(1) *Yellow soybeans*. Soybeans that have yellow or green seed coats and which in cross section, are yellow or have a yellow tinge, and may include not more than 10.0 percent of soybeans of other colors.

(2) *Mixed soybeans*. Soybeans that do not meet the requirements of the class Yellow soybeans.

(b) *Damaged kernels*. Soybeans and pieces of soybeans that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, stinkbug-stung, or otherwise materially damaged. Stinkbug-stung kernels are considered damaged kernels at the rate of one-fourth of the actual percentage of the stung kernels.

(c) *Foreign material*. All matter that passes through an 8/64 round-hole sieve and all matter other than soybeans remaining in the sieved sample after sieving according to procedures prescribed in FGIS instructions.

(d) *Heat-damaged kernels*. Soybeans and pieces of soybeans that are materially discolored and damaged by heat.

(e) *Purple mottled or stained*. Soybeans that are discolored by the growth of a fungus; or by dirt; or by a dirt-like substance(s) including nontoxic inoculants; or by other nontoxic substances.

(f) *Sieve. 8/64 round-hole sieve*. A metal sieve 0.032 inch thick perforated with round holes 0.125 (8/64) inch in diameter.

(g) *Soybeans of other colors*. Soybeans that have green, black, brown, or bicolored seed

## Soybeans

coats. Soybeans that have green seed coats will also be green in cross section. Bicolored soybeans will have seed coats of two colors, one of which is brown or black, and the brown or black color covers 50 percent of the seed coats. The hilum of a soybean is not considered a part of the seed coat for this determination.

(h) *Splits*. Soybeans with more than one-fourth of the bean removed and that are not damaged.

### Principles Governing the Application of Standards

#### § 810.1603 Basis of determination.

Each determination of class, heat-damaged kernels, damaged kernels, splits, and soybeans of other colors is made on the basis of the grain when free from foreign material. Other determinations not specifically provided for under the general provisions are made on the basis of the grain as a whole.



# Soybeans

## § 810.1604 Grades and grade requirements for soybeans

Grading factors	Grades U. S. Nos.			
	1	2	3	4
Minimum test weight per bushel	56.0	54.0	52.0	49.0
Maximum percent limits of				
Damaged kernels				
Heat (part of total)	0.2	0.5	1.0	3.0
Total	2.0	3.0	5.0	8.0
Foreign material	1.0	2.0	3.0	5.0
Splits	10.0	20.0	30.0	40.0
Soybeans of other colors <sup>1/</sup>	1.0	2.0	5.0	10.0
Maximum count limits of				
Other materials				
Animal filth	9	9	9	9
Castor beans	1	1	1	1
Crotalaria seeds	2	2	2	2
Glass	0	0	0	0
Stones <sup>2/</sup>	3	3	3	3
Unknown foreign substance	3	3	3	3
Total <sup>3/</sup>	10	10	10	10
<p>U.S. Sample grade are soybeans that:</p> <p>(a) Do not meet the requirements for U.S. Nos. 1, 2, 3, or 4; or</p> <p>(b) Have a musty, sour, or commercially objectionable foreign odor (except garlic odor); or</p> <p>(c) Are heating or otherwise of distinctly low quality.</p>				
<p><sup>1/</sup> Disregard for Mixed soybeans.</p> <p><sup>2/</sup> In addition to the maximum count limit, stones must exceed 0.1 percent of the sample weight.</p> <p><sup>3/</sup> Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones, and unknown foreign substances. The weight of stones is not applicable for total other material.</p>				

## Soybeans

### Special Grades and Special Grade Requirements

#### § 810.1605 Special grades and special grade requirements.

(a) *Garlicky soybeans*. Soybeans that contain five or more green garlic bulblets or an equivalent quantity of dry or partly dry bulblets in a 1,000-gram portion.

(b) *Purple mottled or stained*. Soybeans with pink or purple seed coats as determined on a portion of approximately 400 grams with the use of an FGIS Interpretive Line Photograph.

## Subpart K -- United States Standards for Sunflower Seed

### Terms Defined

#### § 810.1801 Definition of sunflower seed.

Grain that, before the removal of foreign material, consists of 50.0 percent or more of cultivated sunflower seed (*Helianthus annuus* L.) and not more than 10.0 percent of other grains for which standards have been established under the United States Grain Standards Act.

#### § 810.1802 Definition of other terms.

(a) *Cultivated sunflower seed*. Sunflower seed grown for oil content. The term seed in this and other definitions related to sunflower seed refers to both the kernel and hull which is a fruit or achene.

(b) *Damaged sunflower seed*. Seed and pieces of sunflower seed that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, heat-damaged, mold-damaged, sprout-damaged, or otherwise materially damaged.

(c) *Dehulled seed*. Sunflower seed that has the hull completely removed from the sunflower kernel.

(d) *Foreign material*. All matter other than whole sunflower seeds containing kernels that can be removed from the original sample by use of an approved device and by handpicking a portion of the sample according to procedures prescribed in FGIS instructions.

(e) *Heat-damaged sunflower seed*. Seed and pieces of sunflower seed that are materially discolored and damaged by heat.

(f) *Hull (Husk)*. The ovary wall of the sunflower seed.

(g) *Kernel*. The interior contents of the sunflower seed that are surrounded by the hull.

Sunflower Seed

Principles Governing the Application of Standards

§ 810.1803 Basis of determination.

Each determination of heat-damaged kernels, damaged kernels, test weight per bushel, and dehulled seed is made on the basis of the grain when free from foreign material. Other determinations not specifically provided for in the general provisions are made on the basis of the grain as a whole, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from foreign material.

Grades and Grade Requirements

§ 810.1804 Grades and grade requirements for sunflower seed.

Grade	Minimum test weight per bushel (pounds)	Maximum limits of--		Dehulled seed (percent)
		Damaged sunflower seed		
		Heat damaged (percent)	Total (percent)	
U.S. No. 1	25.0	0.5	5.0	5.0
U.S. No. 2	25.0	1.0	10.0	5.0

U.S. Sample grade--  
U.S. Sample grade is sunflower seed that:  
(a) Does not meet the requirements for the grades U.S. Nos. 1 or 2; or  
(b) Contains 8 or more stones which have an aggregate weight in excess of 0.20 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria* spp.), 2 or more castor beans (*Ricinus communis* L.), 4 or more particles of an unknown foreign substance(s), or a commonly recognized harmful or toxic substance(s), 10 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 600 grams of sunflower seed; or  
(c) Has a musty, sour, or commercially objectionable foreign odor; or  
(d) Is heating or otherwise of distinctly low quality.



## Subpart L -- United States Standards for Triticale

### Terms Defined

#### § 810.2001 Definition of triticale.

Grain that, before the removal of dockage, consists of 50 percent or more of triticale (*X Triticosecale* Wittmack) and not more than 10 percent of other grains for which standards have been established under the United States Grain Standards Act and that, after the removal of dockage, contains 50 percent or more of whole triticale.

#### § 810.2002 Definition of other terms.

(a) *Damaged kernels*. Kernels, pieces of triticale kernels, and other grains that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(b) *Defects*. Damaged kernels, foreign material, and shrunken and broken kernels. The sum of these three factors may not exceed the limit for the factor defects for each numerical grade.

(c) *Dockage*. All matter other than triticale that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of triticale kernels removed in properly separating the material other than triticale and that cannot be recovered by properly rescreening or recleaning.

(d) *Foreign material*. All matter other than triticale.

(e) *Heat-damaged kernels*. Kernels, pieces of triticale kernels, and other grains that are materially discolored and damaged by heat.

(f) *Other grains*. Barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, wheat, and wild oats.

(g) *Shrunken and broken kernels*. All matter that passes through a 0.064 x 3/8 oblong-hole sieve after sieving according to procedures prescribed in FGIS instructions.

(h) *Sieve*. 0.064 x 3/8 oblong-hole sieve. A metal sieve 0.032 inch thick with oblong perforations 0.064 inch by 0.375 (3/8) inch.

## Triticale

### Principles Governing the Application of Standards

#### § 810.2003 Basis of determination.

Each determination of heat-damaged kernels, damaged kernels, material other than wheat or rye, and foreign material (total) is made on the basis of the grain when free from dockage and shrunken and broken kernels. Other determinations not specifically provided for under the general provisions are made on the basis of the grain when free from dockage except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

### Grades and Grade Requirements

#### § 810.2004 Grades and grade requirements for triticale.

Grade	Minimum test weight per bushel (pounds)	Minimum limits of					
		Damaged kernels		Foreign material		Shrunken and broken kernels (percent)	Defects <sup>3/</sup> (percent)
		Heat damaged (percent)	Total <sup>1/</sup> (percent)	Material other than wheat or rye (percent)	Total <sup>2/</sup> (percent)		
U.S. No. 1	48.0	0.2	2.0	1.0	2.0	5.0	5.0
U.S. No. 2	45.0	0.2	4.0	2.0	4.0	8.0	8.0
U.S. No. 3	43.0	0.5	8.0	3.0	7.0	12.0	12.0
U.S. No. 4	41.0	3.0	15.0	4.0	10.0	20.0	20.0

U.S. Sample grade --

U.S. Sample grade is triticale that:

- (a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, or 4; or
- (b) Contains 8 or more stones or any number of stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria* spp.), 2 or more castor beans (*Ricinus communis* L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 2 or more rodent pellets, bird droppings, or equivalent quantity of other animal filth per 1-1/8 to 1-1/4 quarts of triticale; or
- (c) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor); or
- (d) Is heating or otherwise of distinctly low quality.

<sup>1/</sup> Includes heat-damaged kernels.

<sup>2/</sup> Includes material other than wheat or rye.

<sup>3/</sup> Defects include damaged kernels (total), foreign material (total), and shrunken and broken kernels. The sum of these three factors may not exceed the limit for defects for each numerical grade.

## Special Grades and Special Grade Requirements

### § 810.2005 Special grades and special grade requirements.

- (a) *Ergoty triticales*. Triticale that contains more than 0.10 percent of ergot.
- (b) *Garlicky triticales*. Triticale that contains in a 1,000-gram portion more than six green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.
- (c) *Light garlicky triticales*. Triticale that contains in a 1,000-gram portion two or more, but not more than six, green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.
- (d) *Light smutty triticales*. Triticale that has an unmistakable odor of smut, or that contains in a 250-gram portion smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 14 smut balls but not in excess of a quantity equal to 30 smut balls of average size.
- (e) *Smutty triticales*. Triticale that contains in a 250-gram portion smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.





## Subpart M -- United States Standards for Wheat

### Terms Defined

#### § 810.2201 Definition of wheat

Grain that, before the removal of dockage, consists of 50 percent or more common wheat (*Triticum aestivum* L.), club wheat (*T. compactum* Host.), and durum wheat (*T. durum* Desf.) and not more than 10 percent of other grains for which standards have been established under the United States Grain Standards Act and that, after the removal of the dockage, contains 50 percent or more of whole kernels of one or more of these wheats.

#### § 810.2202 Definition of other terms.

(a) *Classes*. There are eight classes for wheat: Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, Hard White wheat, Soft White wheat, Unclassed wheat, and Mixed wheat.

(1) *Durum wheat*. All varieties of white (amber) durum wheat. This class is divided into the following three subclasses:

(i) *Hard Amber Durum wheat*. Durum wheat with 75 percent or more of hard and vitreous kernels of amber color.

(ii) *Amber Durum wheat*. Durum wheat with 60 percent or more but less than 75 percent of hard and vitreous kernels of amber color.

(iii) *Durum wheat*. Durum wheat with less than 60 percent of hard and vitreous kernels of amber color.

(2) *Hard Red Spring wheat*. All varieties of Hard Red Spring wheat. This class shall be divided into the following three subclasses:

(i) *Dark Northern Spring wheat*. Hard Red Spring wheat with 75 percent or more of dark, hard, and vitreous kernels.

(ii) *Northern Spring wheat*. Hard Red Spring wheat with 25 percent or more but less than 75 percent of dark, hard, and vitreous kernels.

(iii) *Red Spring wheat*. Hard Red Spring wheat with less than 25 percent of dark, hard, and vitreous kernels.

## Wheat

(3) *Hard Red Winter wheat*. All varieties of Hard Red Winter wheat. There are no subclasses in this class.

(4) *Soft Red Winter wheat*. All varieties of Soft Red Winter wheat. There are no subclasses in this class.

(5) *Hard White wheat*. All hard endosperm white wheat varieties. There are no subclasses in this class.

(6) *Soft White wheat*. All soft endosperm white wheat varieties. This class is divided into the following three subclasses:

(i) *Soft White wheat*. Soft endosperm white wheat varieties which contain not more than 10 percent of white club wheat.

(ii) *White Club wheat*. Soft endosperm white club wheat varieties containing not more than 10 percent of other soft white wheats.

(iii) *Western White wheat*. Soft White wheat containing more than 10 percent of white club wheat and more than 10 percent of other soft white wheats.

(7) *Unclassed wheat*. Any variety of wheat that is not classifiable under other criteria provided in the wheat standards. There are no subclasses in this class. This class includes any wheat which is other than red or white in color.

(8) *Mixed wheat*. Any mixture of wheat that consists of less than 90 percent of one class and more than 10 percent of one other class, or a combination of classes that meet the definition of wheat.

(b) *Contrasting classes*. Contrasting classes are:

(1) Durum wheat, Hard White wheat, Soft White wheat, and Unclassed wheat in the classes Hard Red Spring wheat and Hard Red Winter wheat.

(2) Hard Red Spring wheat, Hard Red Winter wheat, Hard White wheat, Soft Red Winter wheat, Soft White wheat, and Unclassed wheat in the class Durum wheat.

(3) Durum wheat and Unclassed wheat in the class Soft Red Winter wheat.

(4) Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, and Unclassed wheat, in the classes Hard White wheat and Soft White wheat.

(c) *Damaged kernels.* Kernels, pieces of wheat kernels, and other grains that are badly ground-damaged, badly weather-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

(d) *Defects.* Damaged kernels, foreign material, and shrunken and broken kernels. The sum of these three factors may not exceed the limit for the factor defects for each numerical grade.

(e) *Dockage.* All matter other than wheat that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of wheat kernels removed in properly separating the material other than wheat and that cannot be recovered by properly rescreening or recleaning.

(f) *Foreign material.* All matter other than wheat that remains in the sample after the removal of dockage and shrunken and broken kernels.

(g) *Heat-damaged kernels.* Kernels, pieces of wheat kernels, and other grains that are materially discolored and damaged by heat which remain in the sample after the removal of dockage and shrunken and broken kernels.

(h) *Other grains.* Barley, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, and wild oats.

(i) *Shrunken and broken kernels.* All matter that passes through a 0.064 x 3/8 oblong-hole sieve after sieving according to procedures prescribed in the FGIS instructions.

(j) *Sieve.* 0.064 x 3/8 oblong-hole sieve. A metal sieve 0.032 inch thick with oblong perforations 0.064 inch by 0.375 (3/8) inch.

### Principles Governing the Application of Standards

#### § 810.2203 Basis of determination.

Each determination of heat-damaged kernels, damaged kernels, foreign material, wheat of other classes, contrasting classes, and subclasses is made on the basis of the grain when free from dockage and shrunken and broken kernels. Other determinations not specifically provided for under the general provisions are made on the basis of the grain when free from dockage, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

## Wheat

### Grades and Grade Requirements

#### § 810.2204 Grades and grade requirements for wheat.

(a) Grades and grade requirements for all classes of wheat, except Mixed wheat.

Grading factors	Grades U.S. Nos.				
	1	2	3	4	5
Minimum pound limits of:					
Test weight per bushel					
Hard Red Spring wheat or White Club wheat	58.0	57.0	55.0	53.0	50.0
All other classes and subclasses	60.0	58.0	56.0	54.0	51.0
Maximum percent limits of:					
Defects:					
Damaged kernels					
Heat (part of total)	0.2	0.2	0.5	1.0	3.0
Total	2.0	4.0	7.0	10.0	15.0
Foreign material	0.4	0.7	1.3	3.0	5.0
Shrunken and broken kernels	3.0	5.0	8.0	12.0	20.0
Total <sup>1/</sup>	3.0	5.0	8.0	12.0	20.0
Wheat of other classes: <sup>2/</sup>					
Contrasting classes	1.0	2.0	3.0	10.0	10.0
Total <sup>3/</sup>	3.0	5.0	10.0	10.0	10.0
Stones	0.1	0.1	0.1	0.1	0.1
Maximum count limits of:					
Other material:					
Animal filth	1	1	1	1	1
Castor beans	1	1	1	1	1
Crotalaria seeds	2	2	2	2	2
Glass	0	0	0	0	0
Stones	3	3	3	3	3
Unknown foreign substances	3	3	3	3	3
Total <sup>4/</sup>	4	4	4	4	4
Insect-damaged kernels in 100 grams	31	31	31	31	31
U.S. Sample grade is Wheat that:					
(a) Does not meet the requirements for U.S. Nos. 1, 2, 3, 4, or 5; or					
(b) Has a musty, sour, or commercially objectionable foreign odor (except smut or garlic odor) or					
(c) Is heating or of distinctly low quality.					
<sup>1/</sup> Includes damaged kernels (total), foreign material, shrunken and broken kernels.					
<sup>2/</sup> Unclassed wheat of any grade may contain not more than 10.0 percent of wheat of other classes.					
<sup>3/</sup> Includes contrasting classes.					
<sup>4/</sup> Includes any combination of animal filth, castor beans, crotalaria seeds, glass, stones, or unknown foreign substance.					



(b) *Grades and grade requirements for Mixed wheat.* Mixed wheat is graded according to the U.S. numerical and U.S. Sample grade requirements of the class of wheat that predominates in the mixture, except that the factor wheat of other classes is disregarded.

### **Special Grades and Special Grade Requirements**

#### **§ 810.2205 Special grades and special grade requirements.**

(a) *Ergoty wheat.* Wheat that contains more than 0.05 percent of ergot.

(b) *Garlicky wheat.* Wheat that contains in a 1,000 gram portion more than two green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.

(c) *Light smutty wheat.* Wheat that has an unmistakable odor of smut, or which contains, in a 250-gram portion, smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 5 smut balls, but not in excess of a quantity equal to 30 smut balls of average size.

(d) *Smutty wheat.* Wheat that contains, in a 250-gram portion, smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.

(e) *Treated wheat.* Wheat that has been scoured, limed, washed, sulfured, or treated in such a manner that the true quality is not reflected by either the numerical grades or the U.S. Sample grade designation alone.







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